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The JOURNAL *of* GEOGRAPHY

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THE SCIENTIFIC CITY AND ITS FOOD SUPPLY*

By J. RUSSELL SMITH
University of Pennsylvania

In the spacious opportunities of a geography that treats of the "where and the why" of man's distribution over the earth one is tempted perhaps to dwell most particularly upon the long-range aspects of this distribution. Yet there is an opportunity for equal usefulness by giving attention to such short-range relationships as the plan of the town.

We need a live concept of the town, not a dead concept of mere location. We should think of the town as a functioning organism like a living body. In this realization of the town is one of the places where civics and geography meet and where their deliberate fusion gives a practical basis for the promotion of human welfare.

Man may be said to make use of the earth in two ways, and according to these two forms of usage we may speak of his "home" space, where he lives, and his "sustenance" space, whereby he lives. For the country dweller the two may be identical or at least they are likely to be closely in touch; for the city dweller they may be far apart. The distance separating them depends chiefly on the size of the city. The greater the city the farther must it reach out for sustenance space.

The phenomenal growth of the modern American city has extended the stretch of its sustenance space, which is at present unduly divorced from the home space because of our planless railroad development. The orgy of railroad transportation of

* Adapted from a chapter in the author's book "The World's Food Supply" to be published shortly by Henry Holt & Co.

this last half century with its unorganized individualism has so paralyzed the local market that we live crowded in masses of hundreds of thousands while hundreds of miles of railroad track reach out through almost empty land; and we have the contradictory problems of abandoned farms, overcrowded cities, and insufficient food. Take the case of New York City, importing every day hundreds of carloads of supplies, most of which rumble into the city across the north Jersey marshes, thousands of acres of rich black muck soil with a riotous growth of cat-tails shoulder high. This land is ideal truck land, much more easy to reclaim than the lands of Holland. It is literally in sight and even within sound of the city where reside millions of people who would eat every ounce of any kind of edible produce that might be grown on these thousands of acres of waste land.

THE DISADVANTAGES OF THE BIG CITY

The waste of natural resources and human effort involved in such conditions has been brought home to us in vivid fashion by the war, and we may hope for some amelioration if reconstruction should happily prove to be really constructive. There is good reason to believe that the concept of man power and the new-found importance of health will make human welfare the object of programs of action rather than merely of talk. The increased attention to human welfare that we may expect should cause us to act upon three important discoveries with regard to the modern city.

(1) The present big city is too big for good food supply at a reasonable price.

(2) It is too big for good living conditions.

(3) There is no social advantage to offset the greater food cost and the poorer living conditions.

The present big city and the related distant lands needful to its support are a result of a period when individualism ran riot and society was an agglomeration of private profiteers rather than an organism of mutual service. If the war teaches us anything, it will teach us to draw a distinction between profits and service, between business and life. With this distinction in mind we shall reach an entirely new point of view with regard to the

utilization of the earth. If man must go to war to keep it free politically, then he must use his brains and fight with ideas and votes to keep it free industrially in order that human beings, especially boys and girls, may live rather than exist, may be healthy and strong rather than sickly and weak.

What does the scientific utilization of the earth as the home of man call for? Shall we continue to endure on the one hand the hopelessly crowded cities with their slums and on the other the empty country from which man flees because he is lonely? Shall we continue to let cities grow up helter-skelter till they become an economic cancer, or shall we have the scientifically planned city community, the scientifically planned country community, just as we have scientifically planned factories and scientifically planned armies?

When an architect builds a factory, he lays down upon the table before him a list of the various things the factory must do and proceeds to create a structure which will best meet these known needs. It seems strange that, despite our thousands of years of experience with cities, there is today so little attempt to apply large-scale planning to the idea of the city as a functioning unit and to lay it out accordingly. Is it desirable that a city should grow indefinitely large? A city should perform certain functions. When it is big enough to perform these there is no reason for an increase in size.

A Scientifically Planned City

Some years ago Mr. Ebenezer Howard, an Englishman, sat down and drew up plans for an ideal city. He first made an analysis of the situation. The city affords to its inhabitants the social opportunity of numbers, to the factory the labor market of numbers; but it inevitably tends to become crowded. On the other hand the advantages of the country are cheap sites for homes, room to grow things in yards and gardens, room to play, fresh air, and nearness to food supplies; but the country lacks social opportunity and opportunity for employment. Having put these things down Howard proceeded to plan a city which swung around the cardinal principles of having the inhabitants (1) all so placed that they were near enough to the factories to be able

to walk to their jobs; (2) all so near to the shops that they could walk and carry their purchases if they chose; (3) all so near to open space that they could easily walk to the farms, fields, and playgrounds; yet (4) numerous enough to afford the requisite labor supply for the factories—which, after all, is the economic object of the city.

These principles mean limitation of the population. Why have more people if the city is big enough to fulfil its function? It is most encouraging to know that we can get all we need from the city without any cyclopean reform except the employment of common sense. The plan proposed is merely another way of applying our well-established principle of building restrictions, already existing in a thousand forms. We can prevent overcrowding by prescribing a minimum size for lots and then prescribing a maximum relation between the area of a lot and the area that can be covered by buildings upon it. Mr. Howard estimates that a city would be full-grown with about 32,000 inhabitants, more or less, according to the size of the families. After this city was complete, further increased residential needs could be met by the building of another city near by, just as the next suburban station is built along the railroad. In Mr. Howard's ideal plan about 6,000 acres are required for the city, of which about half are left for farms and the rest used for streets and parks, buildings and home spaces.

THE GARDEN CITY IN PRACTICE

One might continue to tell this story as a plan, a hope, a vision. It is more effective to tell it as an achievement, for the city has been built and has been seen by the writer. After much hard work Mr. Howard succeeded in forming an association known as the First Garden City Ltd. About fifteen years ago this association bought some 4,000 acres of farm land forty miles north of London in Hertfordshire on one of the great railways and proceeded to set aside the central part of it for the city, to lay out streets, and to plan a factory town. The project has succeeded. In the nine years from 1904 to 1913 about thirty factories moved to the town, which at the latter date had a population of 8,000 and was steadily growing. The crucial test of its success, how-

ever, is the balance sheet. The company is now paying dividends. The financial plan provides that the promoters shall get 5 per cent and that all further profits shall go to the city for improvements and reduction of taxation. One of the manufacturers told the writer that he could foresee the time when the town would be free from taxation; and then, he said, "manufacturers will come here in droves."

Inasmuch as the town is definitely planned, it has ample factory sites on railroad sidings; and adjoining them a large district reserved for the cottages of factory workers. This district is ensured to factory workers by a restriction which prescribes the minimum and maximum cost of houses. That practically means artisans' cottages. Beyond, in both directions, are larger lots with higher rents and different building restrictions; and this means middle class occupants. On the highest ground still farther away from the factories are yet larger and more expensive lots where factory owners and persons of some means have their homes. Near the station is the natural place for the shopping district; while immediately across from it is a seventy-acre playground. Smaller playgrounds of twelve, five, three and one-half acres are scattered about. So far as the writer knows this is the only town of its size in the world that has public provision for simultaneous play of any large percentage of its population. As the limitation of population is provided for in building restrictions, these facilities of accessibility and play space become permanent. Just beyond the factory district come the farm holdings.

It is one of the most beautiful factory towns in the world, for the reason that every house has room enough for flowers in the front and vegetables in the rear. In no part of the town are the lots smaller than twelve to the acre, which means that they can be practically 20 by 200 feet, even in sections given over to the artisan. That makes provision for a small front yard, a cottage site, a little back yard, and a garden 20 by 100 feet.

Advantages of a Garden City

The people of this town have almost unique opportunities for the development of health, muscle, character, and wealth through by-industry. Think of the opportunities for boys and girls in

gardening, especially as the age for beginning factory labor is being raised by legislation. This garden opportunity and the additional opportunities offered in the keeping of poultry and rabbits are also a boon to the old and are being used. If a man wishes to engage in market gardening in addition to his regular work, small holdings can be rented just beyond the town limit. It is not necessary to pay city lot rent. The land is not suburban, it is farm land created so by contract.

The fact that this garden city is definitely planned saves it from the endless turmoil of reconstruction which a growing city encounters, each generation tearing down what the previous generation built to last for decades. Thus in Philadelphia, New York, London, Paris, and Tokyo the business section is invading the residence section, either awkwardly by adapting substantial old residences to its requirements or extravagantly by tearing down good structures and building new. The suburbs of a growing city are successively swamped by new uses. Because its residents are expecting to sell in a short time for building purposes, the land is held for high prices, and its chief occupation in America is the support of "for sale" signs when it should be devoted to crops and playgrounds. Around this garden city is a belt of farms and playgrounds which, owing to the fact that it is definitely set apart for these uses, has and can have no sale value. In this respect it resembles our parks.

The most significant part of the whole undertaking is that it has been accomplished by the application of existing practices and existing laws by means of existing human science. Most attempts at social reconstruction have to await a conversion of the majority of the community to a new point of view; and, if the dreams of the constructive socialist come true, we shall be obliged also to develop an entirely new system and type of business administration and probably also a new brand of human nature. Without waiting for this millennial process a garden city like this of Letchworth, England, can be built now in any well-chosen location. Any group of capitalists with constructive imagination and good business ability can start it under existing laws. There is plenty of room along the Delaware River, for example, for all the industrial population now living near it—and a much larger popula-

tion—to be so accommodated that they could avail themselves of all the principles involved in the garden city of Letchworth and have the best possible access to the harbor in its waters. They now have poor access to it.

GARDEN CITIES AND THE FOOD SUPPLY

Food conditions alone are sufficient to set the whole world to building garden cities rather than enlarging the pavement cities of the present. In Letchworth every boy and girl may have the garden which has already become an element of city education in many parts of the world. Family gardening, which during the war has been taken up for the first time by thousands, has there a reasonable chance of becoming a permanent addition to family life. Besides its health aspect and the pleasure it gives to those who love the earth and growing things, it affords substantial opportunity for income.

A study of cotton mill towns in the American South (*U. S. Dept. of Agric. Bull. No. 602*) shows that of the cases studied 35 out of 144 families with gardens averaging 400 square feet raised supplies about equal in value to the rent they paid for their homes. In another bulletin (*U. S. Dept. of Agric. Bull. No. 936*) is cited the case of boys' and girls' club gardens in which a group of twelve with gardens under 500 square feet in extent produced an income of 2¼ cents a square foot on fixed and very reasonable prices. In Philadelphia the Vacant Lots Association, which has aided school children and others to cultivate small plots, found that on a very small area a youngster could sometimes get as much as 10 cents a square foot at pre-war prices. This, however, was done by growing in a season several crops of which the yield is large and the family need is small and by making sales at absolutely retail prices.

CLASSIFICATION OF FOODS BY DISTANCE

This possible scientific distribution of man on the land in garden cities and tributary farms shows us that we may classify our food according to the distance from which it may, to best advantage, be taken to market.

1. Immediate vicinity—distance covered by the farmer's wagon or motor truck, 2 to 5, or even 10 miles. This includes the farm

zone around the garden city and is an area sufficient to produce all the garden stuff in season and a considerable surplus for canning and drying, especially if, as could easily be the case, there is equipment for community drying. This immediate vicinity can also produce some of the milk, all of the small fruits in season, some tree fruits, and most of the eggs, poultry, and potatoes if climate and soil are suitable.

2. Motor express or farmer's truck zone—10 to 50 miles. It is very difficult for us to appreciate the social and agricultural results that are to come from the use of the motor truck in city food supply. Some one has said that the Allies won the war with the motor truck. The war has shown us that woman can become our teamster when she tries and can drive ten horses instead of two. Within this motor truck zone should be produced the bulk of the milk (though none of the cows: they will come from distant ranges when they are ready to enter the dairy); most of the tree fruits, such as apples and peaches, if climate permits; a good part of the potatoes; most of the eggs and poultry not produced in zone 1; and perhaps small quantities of grain and red meat, especially pork.

3. Distant places reached by rail or water—50 to 15,000 miles. These long distances and the more expensive transport are no bar to the carriage of goods having good keeping quality and small bulk per dollar's worth, that is high value. The list of such goods includes meat, butter, cheese, condensed and dried milk, bread stuffs, dried legumes, dried fruits, canned goods, nuts and vegetable fats, exotic produce such as oranges, lemons, bananas, and a host of tropical fruits which we may get when we are ready to enlarge our bill of fare and establish new industries.

No part of the world is too far away to help supply the well located garden city with these staples.

GEOGRAPHY IN AMERICAN AND EUROPEAN UNIVERSITIES

By R. H. WHITBECK
University of Wisconsin

In American Universities

In 1912 a survey of geography in American universities was made by Miss Huldah Winsted, then of the University of Minnesota, and her report was published in the *Journal of Geography* for June, 1912 (Vol. 10, pp. 309-316).

TABLE I—GEOGRAPHY IN AMERICAN UNIVERSITIES

UNIVERSITY	NUMBER OF ENROLLMENTS		YEAR WHEN FIRST TAUGHT	ENROLLMENTS DURING THE FIRST YEAR
	1910-11	1916-17		
California	592	743	1898	35
Chicago	607	916	1892	85
Colorado	31	216	1910	31
Columbia	131	157	1896	..
Cornell	137	392	1893-94	14
Harvard	...	448	Prior to 1841	..
Illinois	...	115	....	..
Indiana	40	200	About 1886	..
Iowa	...	373	....	..
Kansas	28	...	About 1901	..
Louisiana	...	24	....	..
Michigan	36	534	1907-08	13
Minnesota	325	311	1900-01	11
Missouri	40	36	About 189[illegible]	..
Nebraska	407	598	1902	78
North Dakota	14	119	1908-09	3
Northwestern	107	313	About 1890	..
Oregon	207	85	1909-10	29
Pennsylvania	260	2,319	1902	30
Princeton	160	155	1854	79
South Dakota	25	...	1909	15
Washington	...	238	....	..
Wisconsin	704	1,069	1868	87*
Yale	129	396	Prior to 1872	..

* Enrollment in 1901. Figures for 1868 not available.

The report brought out the following facts among others:

1. That Harvard and Princeton were the only American universities offering a course in geography prior to 1860.

2. That Cornell and the University of Wisconsin introduced the subject in 1868, and Yale in 1872. That in 1900 only twelve

American universities were teaching geography, and this mainly physical geography.

3. That in 1900 only the University of Chicago enrolled as many as 100 students in all geography courses.

TABLE II—GEOGRAPHY IN 27 COLLEGES AND UNIVERSITIES, 1916-17

INSTITUTION	NUMBER OF GEOGRAPHY COURSES GIVEN IN 1916-17	NUMBER OF STUDENTS ENROLLED IN REGULAR COLLEGE YEAR	NUMBER OF STUDENTS ENROLLED IN SUMMER SESSION	LINES OF MOST NOTABLE GAIN	NUMBER OF INSTRUCTORS IN STAFF
Beloit College	1	69	...	Com'l Geography	1
Univ. of California	11	743	40	Gen'l and Econ.	3
Univ. of Chicago	19	916	238	All	8
Colgate Univ	4*	257	...	All	1
Univ. of Colorado	3	216	...	All	3
Columbia Univ	16	157	173	All	5
Cornell Univ	7	392	120	Com'l Geography	5
Denison Univ	6	411	60	.....	1
Harvard Univ	14	448	28	All	8
Univ. of Illinois	6	115	...	.....	2
Indiana Univ	3	200	44	Physiography	1
Univ. of Iowa	5	373	40	All	4
Louisiana Univ	2	24	...	Physiography	1
Univ. of Michigan	8	534	71	....	3
Univ. of Minnesota	8	311	66	All	2
Univ. of Missouri	8	86	108	All but Physiogr.	3
Univ. of Nebraska	15	598	71	Field and Regional	5
Univ. of N. Dakota	5	119	...	Phys. and Meteorol.	1
Northwestern Univ	3	313	...	Geogr. of N. A.	1
Oberlin College	4	36	3	.....	2
Univ. of Oregon	2	85†	...	Econ. Geography	2
Univ. of Pennsylvania	10	2,319‡	93	Econ. Geography	11
Princeton Univ	1	155	...	.....	1
Univ. of Washington	7	238	40	Phys. and Econ	3
Wellesley College	6	172	...	Human	5
Univ. of Wisconsin	15	1,069	218	Human	9
Yale Univ	10	396	...	.....	5

* Does not include 8 weeks of Physiography given in Geology to 130 students.

† Many more could have been enrolled. Class limited.

‡ 1,142 students in course in Economic Resources: 685 in course in Manufacturing Industries.

With the exception of Yale all of the institutions in the table reported a gain in geographical studies.

4. That in 1910, the number of American universities giving courses in geography had grown to 31, offering a total of 142 courses.

5. That about 70 of these 142 courses dealt with physical aspects of the study; 13 dealt with economic aspects; 15 with

regional geography; 7 with geographical influences; 10 were courses for the training of teachers; and the remaining 27 were field courses, research courses, and miscellaneous courses.

6. That in 1910 the University of California enrolled nearly 600 students in geography, while the University of Chicago and the University of Wisconsin each enrolled over 700 students, and at least 13 institutions were counting their geography students by hundreds.

TABLE III—CLASSIFICATION OF COURSES IN GEOGRAPHY IN 27 COLLEGES AND UNIVERSITIES, 1916–17

COURSE	NUMBER OF UNIVERSITIES GIVING THIS COURSE	COURSE	NUMBER OF UNIVERSITIES GIVING THIS COURSE
Physical Geography	27	Physiography of the United States	4
Economic (or Commercial) Geography	25	General Geography	4
Meteorology	17	Geographic Influences	4
Geography of North America	14	Geographic Principles	4
Special Laboratory and Field Work	13	Conservation of Resources	3
Geography of Europe	11	Geography of Asia	2
Geography in Relation to History	11	Political Geography	2
Geography of South America	10	Map Interpretation	2
Geography Teaching	9	Glaciers and Glaciation	2
Climatology	9	Agricultural Geography	2
Seminars	8	Regional Geography	2
Advanced Physical Geography	7	College Geography	1
Geography of Home State	6	Geographic Environment	1
Special Research	6	Geography of the United States	1
Advanced Economic Geography	4	Mathematical Geography	1
		Oceanography	1
		Urban Geography	1

In Table I all of the data except the enrollment for 1916-17 are reproduced from one of Miss Winsted's tables (Table IV, p. 314). The figures for 1916-17 were obtained directly from the universities concerned, in nearly every case from the head of the department in which geography is taught. The enrollment figures are obtained by adding the total number of students in all geography classes for both semesters. Chicago operates on the quarter system, having four quarters each year. The summer quarter for Chicago and the summer sessions of other universities are not included in Table I. A student in the University of Chicago taking one course in geography each of three quarters is counted as three enrollments; but inasmuch as all of the geography classes at Chicago

meet either four or five times a week, while in other institutions most of the classes meet only three times a week, a quarter at Chicago (about twelve weeks) is here considered as the equivalent of a semester in other universities.

TABLE IV—NUMBER OF STUDENTS ENROLLED IN CERTAIN STANDARD COURSES, 1916-17 (SUMMER SESSIONS INCLUDED)*

INSTITUTION	PHYSIOGRAPHY	ECON. GEOGR.	METEOROL.	CLIMATOL.	GEOGR. OF N. A.	GEOGR. OF S. A.	GEN'L GEOGR.	GEOGR. OF EUROPE	GEOGR. OF U. S.	GEOGR. INFL'CS
Beloit	35	69	..	..	..	..	..	..	..	..
California	94	..	175	..	70	125	241	..	..	..
Chicago	225	223	20	12	159	80	107	31	18	95
Colgate	130	65	..	..	..	..	..	45	54	..
Colorado	75	..	..	40	101	..	..	..	..	..
Columbia	80	129	..	..	..	..	..	18	..	..
Cornell	125	78	222	..	40	..	..	..	..	..
Denison	72	30	..	..	52	88	..	13	..	181
Harvard	176	21	64	9	28	8	..	11	..	..
Illinois	54	..	30	..	..	16	..	8	..	..
Indiana	195	55	..	..	..	..	..	..	..	..
Iowa	139	229	..	..	..	..	..	..	..	..
Louisiana	13	..	..	..	..	..	..	..	..	..
Michigan	208	127	5	..	53	..	194	..	..	16
Minnesota	64	117	24	..	..	..	..	..	..	..
Missouri	..	23	..	..	33	..	51**	1	..	9
Nebraska	76	134	27	..	73	..	..	..	..	..
North Dakota	55	..	45	..	..	..	..	..	..	8
Northwestern	..	..	16	..	291†	..	.	..	..	..
Oberlin	17	..	..	..	..	..	..	9	..	..
Oregon	..	..	7	..	..	..	81	..	..	..
Pennsylvania	10	2,089‡	..	42	..	146	..	..	..	..
Princeton	155	..	..	..	..	..	..	..	..	.
Washington	75	135	20	..	..	11	..	..	8	.
Wellesley	162	61	..	..	..	..	..	..	..	30
Wisconsin	492	330	52	44	23	48	124	..	..	..
Yale	34	260	3	7	30	35	..	4	..	.
Totals	2,761	4,175	710	154	953	557	798	140	80	339

* Courses bearing slightly different titles are included under the general titles here given when this treatment appears warranted, and two or more similar but differently named courses are in a few cases combined under one general head.

** Called College Geography.

† Physiography and Geography of North America.

‡ Includes Economic Resources, Commercial Geography of the United States, Manufacturing Industries, and Field Work in Economic Geography.

A comparison of the enrollment in geography in the various universities in 1910-11 and in 1916-17 shows a gain in nearly every instance, and large percentage gains in many institutions. Of course the *total number of students* enrolled in these universities

has grown materially during the six years; so also has the total number of courses in all branches offered to these students. The competition for students among the various courses has grown even more rapidly than has the number of students.

TABLE V—ATTENDANCE IN COURSES: UNIVERSITY OF PENNSYLVANIA, 1916–17

COURSE	FIRST SEMESTER	SECOND SEMESTER	SUMMER 1916	TOTAL
Climate	...	37	5	42
Commercial Geography, U. S.	92	86	13	191
Economic Resources	582	560	61	1,203
Field Work, Economic Geography	5	5	..	10
Geographic Environment	15	15	..	30
Geographic Seminar	19	16	..	35
Geography of Asia and Australia	15	45	..	60
Geography of South America	85	47	14	146
Manufacturing Industries	355	330	..	685
Physiography	10	...	..	10
Total	1,178	1,141	93	2,412

The instructing staff at the University of Pennsylvania consisted of one professor, two assistant professors, three instructors, and five assistants.

TABLE VI—ATTENDANCE IN COURSES: UNIVERSITY OF WISCONSIN, 1916–17

COURSE	FIRST SEMESTER	SECOND SEMESTER	SUMMER 1916	TOTAL
Meteorology and Climatology	15	37	44	96
Physical Geography	460	..	25	485
Economic Geography	..	262	54	316
General Geography	..	124	..	124
Advanced Physiography	7	..	..	7
Glaciers	12	10	11	33
Advanced Economic Geography	14	..	..	14
Teaching of Geography	24	21	..	45
Geography of North America	23	..	..	23
Geography of Wisconsin	..	12	15	27
Geography of South America	..	17	31	48
Agricultural Geography	..	16	16	32
Seminar	..	10	..	10
Research	2	3	..	5
Field Work	..	..	22	22
Total	557	512	218	1,287

Further details are given in Table II, which summarizes the facts obtained in a letter of inquiry sent to the departments of geography and geology in 27 American institutions. Analysis of the courses in Tables III and IV indicates a still preponderant interest in physical and economic geography.

Thus grouping courses under four principal heads, the figures in Table IV show that courses in economic geography were taken by 4,175 students; courses in physical geography, by 2,761; courses dealing with special continents, North America, Europe, etc., by 1,650; and courses dealing with the atmosphere by 1,864.

TABLE VII—ATTENDANCE IN COURSES: UNIVERSITY OF CHICAGO, 1916-17

COURSE	AUTUMN QUARTER	WINTER QUARTER	SPRING QUARTER	SUMMER QUARTER 1916	TOTAL
Physiography	70(2 Sect.)	63(2 Sect.)	52(3 Sect.)	40	225
Elements of Geography	47(2 Sect.)	33	27	..	107
Commercial Geography	19	106(3 Sect.)	31	67	223
North America	15	31	93(3 Sect.)	20	159
General Principles	.....	.....	.....	19	19
Geography in High School	.....	.....	.....	21	21
Local Field Course	.....	.....	6	..	6
Meteorology	20	.....	.....	..	20
Climatology	.....	.....	12	..	12
Geography of Europe	31	.....	.....	..	31
South America	.....	42	.....	38	80
Geography of Eastern Asia	.....	.....	13	..	13
Economic Geography of U. S.	18	.....	.....	..	18
Political Geography	.....	.....	.....	20	20
Influence of Geogr. on Amer. Hist.	27	.....	44	..	71
Conservation of Natural Resources	.....	39	42	..	81
Geographic Influence on History of Western States*	11	.....	.....	13	24
Geography of Illinois*	.....	8	.....	..	8
Seminar*	4	4	8	..	16
Total	262	326	328	238	1,154

* Open to graduates only.

The regular instructing staff at the University of Chicago consisted of two professors, two associate professors, one assistant professor, one instructor, and one assistant. Two lecturers from outside also gave courses.

Detailed attendance by courses in the three universities having the largest enrollment in geography is shown in Tables V, VI, and VII.

ADVANCED DEGREES IN GEOGRAPHY

The following universities gave advanced degrees in geography in 1916: California—2 master's degrees; Chicago—2 master's degrees; Cornell—1 master's degree; Harvard—1 master's degree; Nebraska—1 master's degree; North Dakota—1 master's degree (in history and physiography); Wisconsin—1 doctor's degree and 3 master's degrees. Advanced degrees are also given at Columbia,

Missouri, Princeton, and Yale. None of the other institutions listed in Table II give advanced degrees.

In the development of graduate work in geography the University of Chicago stands first, followed by the University of Wisconsin. Down to and including 1917, Chicago has conferred six doctor's degrees in geography and 16 master's degrees, while the University of Wisconsin has conferred 1 doctor's degree and 14 master's degrees.

In European Universities

GERMAN UNIVERSITIES

German universities have been leaders in the introduction of geographical courses. Nearly all of this development has taken place since 1870—since the geographical lessons taught by the Franco-Prussian war. In 1873 Berlin was the only German university with a chair of geography. In 1885 there were 13 German universities with such chairs (1). Of the 21 universities of the German Empire in 1891 there were only two—Heidelberg and Rostock—in which geography was not taught, while in five it was treated only by *privatdozenten.* In 1885 there were in German universities 26 professors and *privatdozenten* giving courses in geography; in 1888 the number had grown to 37, and in 1891 it reached 45 (2). Writing of this development Mill said: "In Germany a chair of geography is regarded essential to the equipment of a fully organized university. . . . The subject is as fully recognized in degree examinations as any other branch of knowledge." In 1913 Partsch writing in the *Journal of Geography* said: "Now in the German Empire no university exists without a chair of geography . . . Today 29 professors appointed by the states or a municipality are in active service, assisted by 15 instructors. . . . The principal goal of the university instruction is to prepare teachers for the secondary and normal schools by a series of lectures accomplished in a period of three or four years, and by manifold practical and theoretical exercises"(3). In the same article speaking of the various German universities he said, "Berlin, of course, is in a singularly favored position, not only because of the ample financial resources of the seminary of geography

installed in very large rooms, but also because of the connection of this seminary with the oceanographic institute. . . . The universities of Munich, Leipzig, Göttingen have the [next] largest budget for geographical teaching."

COURSES OFFERED IN THE UNIVERSITY OF BERLIN, SUMMER SEMESTER, 1913

History of Geography in Ancient Times
Introduction to Physical Geography
Geography of Europe, not including the German Empire
Central Europe
Russian Asia
Geography of World Trade
Geographical Perspective of the Colonial Empires of Today
History of Cartography
Seminar for Historical Geography
Geography of Ancient Italy
Geographical Excursions (Prof. Penck) on Sunday Afternoons or Sundays and Holidays
Geographical Exercises for Beginners
Geographical Exercises for Advanced Students
Exercises with Geographical Instruments
Geographical Exercises for Individuals
Geographical Colloquium
Geographical Seminar
Exercises in Oceanographic Laboratory with Excursions
Instrumental Meteorology
Introduction to Climatology
Weather Studies
Meteorological Exercises
Meteorological Colloquium
Exercises in Economic Geography
Exercises in Topographic Mapping
Cartographic Exercises for Beginners
Cartographic Exercises for Advanced Students
Astronomical Geography
Theory and Practice in the Use of Geographical, Nautical, Aëronautical, and Astronomical Instruments

The above courses were given by ten professors and instructors.

FRENCH UNIVERSITIES

A professorship of geography has existed at the University of Paris since 1789, but the real interest in college geography dates from about 1880. It became established with the reorganization of the universities. In 1895 professorships of geography existed in five French universities and courses in geography were given in nine others (4). In 1902 it was reported that the University of Paris had four chairs of geography and that the subject was taught as a study of first rank in 12 other French universities (5).

In 1913 the University of Paris had chairs of physical geography, colonial geography, and general geography, with a faculty of seven professors and associate professors, besides a considerable staff of instructors. There were at this date nearly 50

teachers of geography in French universities. As a proof of the great rôle of the universities in geographical development in France, de Martonne cites the fact that more than half of the more important geographical works published in France during the last 25 years are theses for the doctorate; most of these are naturally a reflection of the instruction proceeding from the university chairs (6).

The subject of geographical instruction in France cannot be passed over without reference to the profound influence of the work and personality of Vidal de la Blache, a pioneer of human geography. "Let me say," says Gallois, "that French geography owes more to the inspiration of our common master Vidal de la Blache than to that of any other person" (7).

COURSES OFFERED IN THE UNIVERSITY OF PARIS AND ASSOCIATED INSTITUTIONS OF HIGHER LEARNING IN PARIS, 1911

Physical Geography	Geography of the Mussulman Nations
General Geography (Vidal de la Blache and de Martonne)	Industrial and Commercial Geography
Colonial Geography	Geography (Lemoine)
Geography and Topography	Geography of Indo-China
Geography of North Africa	Geography of Africa
General Geography (Schirmer)	French Colonization
Meteorology	Commercial Geography and Statistics
Geography (de Martonne and Gallois)	Ethnography of Eastern Europe
Paleography	Geography, Climate, and Earth Forms
Geography of the Far East	Geography of Europe
	Geography of France

The above courses were given by 18 professors and instructors, eight of whom are in the faculty of the Sorbonne, three in the College of France, and seven in associated institutions of higher learning in Paris.

BRITISH UNIVERSITIES

Geography was slower in getting a start in British universities than in the leading Continental countries. In 1884 Dr. Keltie was appointed Inspector of Geographical Education and in this capacity made a series of observations throughout Great Britain and in several countries on the Continent (8). His report showed that the status of geographical instruction in Britain compared unfavorably with that in some of the countries of the Continent, notably Germany. This was the starting point of a reform.

In 1887 the subject was admitted to university standing in Oxford and a year later in Cambridge. In the latter university geography has made slow progress, but in Oxford the development has been notable. Mr. H. J. Mackinder was at the head of the Oxford School of Geography for ten years and was succeeded by Prof. A. J. Herbertson, who died in 1915. Before the outbreak of the present war, Oxford had a staff of four giving their entire time to the teaching of geography.

The University of London recognized geography in 1898 and in 1916 further dignified it by admitting it to the list of branches in which a diploma is given. London is reported to be the first British university to grant the doctor's degree in geography. The faculty includes the two eminent geographers, Professors Mackinder and Lyde.

The Universities of Manchester, Liverpool, Leeds, Birmingham, and Sheffield introduced courses in geography a decade or more ago (9).

Both of the leading Scottish universities—Edinburgh and Glasgow—give courses in geography; the lectureship in the former being held by Mr. George G. Chisholm, widely known for his work and writings in economic geography.

In Ireland the Universities of Belfast and Cork offer instruction in geography in connection with geology, and the National University of Ireland, Dublin, offers courses in physical geography and physiography.

OTHER EUROPEAN UNIVERSITIES (PRIOR TO THE WAR)

The University of Vienna had two professors and three instructors in geography; four other Austrian universities and six Hungarian universities had professors of geography. Italian universities had 13 professors and lecturers in geography; three Belgian universities had professors; the University of St. Petersburg had two professors, and five other Russian universities (Moscow, Kharkov, Kazan, Dorpat, and Warsaw) each had one. Helsingfors in Finland also had one. Switzerland had professors of geography in three universities and lecturers in two others. Holland, Denmark, Norway, Serbia, and Spain each had one or more.

The trend was notably toward regional geography and applied geography. Ethnographical and anthropological courses are much more in evidence than they are in American universities, while physical geography and economic geography, under these names at least, are decidedly less prominent. In the Continental universities the practice of offering general courses under the head of seminars and geographical "exercises" is common and is one of the noticeable differences as compared with the practice in American institutions. Courses in which history and geography are interrelated are also more common in Europe than in America. European geographers began humanizing their instruction long before we did. In fact, geography in Europe never had the strong physiographic trend that it has had here.

In European universities the large majority of those who make geography their major study are preparing to teach the subject. Geography for the benefit of persons who intend to enter commercial activities is more often studied in the special commercial schools than in the universities. In 1912, when some thirty European geographers joined American geographers in an international transcontinental excursion, the writer made inquiry of the European geographers and was informed that geography was unquestionably gaining in strength and in general respect in their university faculties.

Present Trend of Geography in the Universities

Continental Universities

The war has so depleted European universities and has so absorbed the energies of the nations that any trend in educational practices during the past four years must be regarded as abnormal.

Great Britain

In the British Isles the subject is gaining. Even during the war, several British universities have taken forward steps in this field. For example, the University College of Wales, Aberystwyth, has received a liberal endowment for a chair of geography, and Dr. H. J. Fleure has been appointed to the position with a full

professorship. The University of Liverpool has also advanced the lectureship in geography to professorial rank (10). The knighting of Dr. J. Scott Keltie and of Colonel Charles F. Close at the New Year, 1918, may be regarded as, in part at least, recognition of their work as geographers. The recognition of geography at the University of Edinburgh to the extent of establishing a special diploma in geography is a further evidence of the growing respect in which the subject is held in the British Isles. And now comes the news that Cambridge University has approved the proposal to establish a Geographical Tripos (Honors Degree), thus placing geography in rank with other subjects of university instruction.

AMERICA

In the United States, geography is rapidly gaining ground, particularly in the universities west of the Alleghanies, and economic geography has had a remarkable growth in the University of Pennsylvania. Graduate courses are thoroughly developed in the University of Chicago and well developed in the University of Wisconsin, while graduate work is given in a score of other institutions. The growth is most notable in those institutions where the subject is most humanized. Physical geography still holds a prominent place, but it is not attracting students so largely as the courses that deal with geography as related to man's activities.

The rapid growth of schools of commerce and industry in our higher institutions is an important cause of the growth of courses in economic geography.

There is an increasing tendency on the part of students to take one or more geographical courses for general culture, just as they take history, sociology, political science, and economics. This is a gratifying tendency. It is by no means the sole function of departments of geography to train specialists. A limited number of specialists is needed but a no less important work lies in supplying a large number of students in the general college course with the geographical elements of a liberal education. Along this line, perhaps, lies the greatest usefulness of geographical courses.

In this country, as in Europe, university students who do their major work in geography are mainly those who expect to teach the subject. The ever-increasing number of students in our university schools of commerce are asking for courses in geography, but they are not as a rule making it their major study.

The urgent demand for trained geographers for government service during the recent war, and the valuable services performed by them in this country and abroad have more than ever directed attention to the need of geographers in other fields than teaching (11).

The significance of the new interest in geography is well put by W. H. Norton, who describes it as "a new educational force which must be directed, utilized, and made permanent by our higher schools" (12).

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HUMAN GEOGRAPHY, AN OPPORTUNITY FOR THE UNIVERSITY*

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The war has most significantly enlarged the interest of the American people in the world and its inhabitants. There is no need now to ask how few among our number could have told offhand, five years ago, where Togoland and the Falkland Islands, Salonika and the Dardanelles, Basra and Baku, Lake Baikal and the Murman Coast were to be found upon the map. When an American soldier was reported to have said that "Alsace" was the name of a lake, the report bore such marks of verisimilitude that surprise and amusement overtook us only when the conscience-stricken correspondent cabled a belated explanation that the "doughboy" was just fooling the Germans. Today, and as a nation, we admit our ignorance of geography; we have discovered that we do not possess a respectable atlas (except of German manufacture); and we know from experience that we may ask in vain, in libraries and book stores, for a reasonably satisfactory descriptive geography.

CAUSES FOR AMERICAN IGNORANCE OF GEOGRAPHY

If we turn to ask for an explanation of this regrettable state of affairs, an answer may be found in the fact that political geography is not a recognized subject in American universities. Physical geography we know, and economic geography, but this other is apparently reserved for instruction in elementary schools and is represented, so far as I can discover, in the curricula of but two or three universities in the United States.

It is not, indeed, to be assumed that the courses offered in institutions of higher learning are to be taken as a fair index of

* In this article Professor Teggart expounds not only the need for adequate recognition of geography in the university but also advances suggestions whereby geography, as a university subject, may be placed on a distinctive and individual basis. In connection Professor Teggart's book "The Processes of History" (Yale University Press, 1918) should be read, especially the chapter on the "Geographical Factor."—EDIT. NOTE.

the intellectual interests of the nation at large. As a matter of fact, the existence of societies and periodicals and the multiplication of books of travel testify to a much wider interest in geography on the part of the public than is witnessed by the meager entries in the announcements of courses issued by our colleges. Nevertheless, the failure of the university to accord suitable recognition to the human side of geography constitutes a most serious impediment to the dissemination and development of geographical knowledge.

EXTENSION OF GEOGRAPHICAL KNOWLEDGE

The explorer, by his personal exertions and sacrifices, makes additions to knowledge; but the recognition accorded to him would be greatly extended by the enlargement, through university teaching, of the audience sufficiently well-informed to appreciate what he has done. The utilization of his results and their incorporation in the accepted body of knowledge would be greatly facilitated by that continual reformulation of the knowledge available which is an all-important part of the work of the university professor. Moreover, what the traveler sees in any area he may visit is conditioned, as we all know, by the stock of ideas and information with which he starts out, and hence the broader his training the more will he be able to turn his labors and hardships to account. Therefore, however great may be the support given to it by the general public, the recognition of geography as a teaching subject by the universities is essential to its extension and development; while the lack of such recognition means not only present ignorance but also a similar limitation of knowledge in the next generation.

POLITICAL GEOGRAPHY IN THE UNIVERSITY

We are, then, in a situation where a subject whose interest and importance is widely recognized by the public is virtually unrepresented in the American university. We are thus led to infer, contrary perhaps to what we should expect, that the university does not take the initiative in the promotion of new lines of study; and indeed there are many instances which might be cited to show that, as a rule, it follows but tardily in the wake of

public opinion. On the other hand, it may be urged in the present case that the interest of a subject, more expressly in the form in which it appeals to the public, is no guarantee of its suitability for university instruction.

Political geography has not been neglected by educators, it has simply been relegated to the schools; and, as at present understood, it would seem to be fitted only for service in school "recitations." Indeed, there would appear to be involved in it too many unrelated details—represented by proper names—and too few ideas to make it an acceptable basis for university work. Unlike history, it does not lend itself to chronological narrative and is enlivened by no dramatic situations; unlike biology, it is wanting in those necessary scientific hypotheses around which great bodies of fact tend to cluster.

Obviously, then, the failure of the university to accept political geography as a teaching subject is a consequence of the failure on the part of those more directly interested, whether inside or outside the academic group, to develop some form of interpretation, some scientific hypothesis, in accordance with which the multitude of facts of which the subject must take cognizance, may be systematically formulated and presented.

"Geology and Geography"

With this clue to work upon, we are in a position to account for the frequent identification of "geography" and "physiography" in university nomenclature. It is true that in such a case as that of the University of Chicago, the word "geography" is accorded its full significance and embraces not merely physiography, but political, economic, and historical geography as well; but, in the country at large, there is evident a tendency to restrict the inclusive term "geography" to the narrow limits of a subdivision of "geology." Here, indeed, we come upon the essential element in the situation. Geography, as taught, has made its way into the university under the protection of geology and has been accorded recognition because of the scientific method and principles which it has inherited from the older subject. Physical geography has been accepted, consciously or unconsciously, because it has been brought within the scope of scientific method,

and political geography can hope to receive the same measure of consideration only when it shall have been established upon an equally sound foundation.

Attempt at a Scientific Approach to the Subject

The problem with which we are confronted is, therefore, one of some magnitude and presents difficulties which cannot be readily met. If geography is to respond to the new responsibilities which success has brought to the American people, then the exponents of this subject must face the emergency and formulate, at least tentatively, a scientific approach to the study of the earth in its relation to man.

It is very fortunate that any study of geography is compelled to begin with physiography; for this subject, through its close connection with geology, is organized upon a scientific basis and may be utilized to present to students a clear conception of scientific method. At the next step, however, the problem arises as to how we may apply, in a field to which the method of science has not yet been extended, not the results but the method employed by geology, palaeontology, and physiography.

Scientific Method

I think we will all admit that if we could only make such a beginning with the study of human evolution as Darwin was able to inaugurate with the study of biological evolution, we should have contributed in a marked degree to the solution of some of the most vexed problems of human life. Unfortunately, much misunderstanding has arisen in recent years from the notion, which seems widely prevalent, that the application of scientific method to the study of man requires a transference to human affairs of formulae arrived at in physics or biology. No view could well be more unfortunate or more carefully calculated to place a barrier in the way of progress. Science is a method applicable to any content and not a given set of formulae; and hence what we have to recognize is that the study of man must undertake to arrive at its own conclusions without borrowing from any previously developed subject.

The preoccupation of physiography is with the modifications

and changes continually proceeding upon the face of the earth; the aim of human geography is to contribute to an understanding of the changes which have resulted in the differences observable between the human groups inhabiting the earth. But the differences between human groups which we must undertake to explain are *cultural* differences, and hence the problem before us is to show how the human groups throughout the world have come to be particularized in their varying equipment of inventions, customs, and beliefs.

Conditions of Human Development

Now, wherever this inquiry may eventually lead, there can be no question that the study of man must begin with a study of his relation to the world in which he lives. Human development has been conditioned at every step by the irregularities of the earth's surface; and it is, in the first place, the variety presented by the earth that we find reflected in the varieties of human culture. The study of geography in relation to man thus implies the investigation of the influence of the environment in contributing to the diversity of culture.

In approaching the problem we must distinguish between (1) a study of the actual content of any given culture and of the influence of different cultures, neighboring or remote, in modifying this content—a study which is the business of ethnography, and (2) a study of the relations of human groups as affected by the physical conformation of the earth, which is a primary concern of human geography. For this second purpose we might well begin, following Vidal de la Blache, with a study of the distribution of population and observe how human aggregation has been conditioned by the natural or developed resources of a given area. But no human group, so far as we can see, has continued to occupy a given habitat in perpetuity; and present density of population requires to be explained in terms of historical development. We are thus led to recognize the fundamental importance of migrations as a clue to the explanation of human evolution. Indeed, the conception that the advancement of man has been dependent upon migrations may be said to constitute the hypothesis upon which, at the present moment, the scientific study of human geography may be commenced.

The Influence of Migrations

If we accept this view of the influence of migrations as a working hypothesis for our study, we must accept the importance of the physical characteristics of the earth, for obviously they have had a determining influence upon the direction of all such movements. In fact, a crucial interest for geography emerges when we observe that routes of travel, laid down, as one might say, before the appearance of man upon the earth, have had a preponderant influence upon the whole course of human development. The interest becomes acute when we observe how one group after another follows along these restricted ways; it becomes intensified when we see the late comers precipitate themselves in conflict upon the earlier arrivals; but the interest becomes scientific when we observe that these conflicts or collisions at the termini of routes have been the antecedents to human advancement.

Processes Governing Human Advancement

An American writer, with no thought for the past, but after observing Europe during four years of war, remarked incidentally that "war refreshes life by taking us out of our ruts. Routine," he continued, "kills men and nations and races; it is stagnation. But war shakes up society, puts men into strange environments, gives them new diversions, new aims, changed ideals." There we have, stated or implied, the fundamental processes through which all human advancement has taken place. First collision (though not necessarily warlike) of different cultures; then an awakening, a release from established habits and ideas; then a reëstablishment of life upon a new level and basis. But we arrive at such results only when we have examined the routes followed by our forefathers and have made comparison of what has happened in all available cases when collisions have taken place. These matters fall within the scope of political geography.

It is quite obvious that not merely a paragraph but an extended book would be required if one were to undertake even an introductory statement in elucidation of this hypothesis of the influence of migrations upon human evolution. What I am concerned with, however, is not to write an introduction to political geography but

to point out that in this theory or hypothesis we have a foundation for a scientific treatment of cultural evolution based upon geography. It remains only to see whether, following the lead of men like Mackinder, Hogarth, Haddon, Petrie, and many others in accepting this hypothesis, we may not proceed to claim for geography a place in the American university.

THE CIRCUMFERENCE OF GEOGRAPHY*

Those who claim for geography a place in higher education are wont to be met with the challenge of the sceptical, "What is geography anyway: what is there in it for the older student?" No one questions the content and value of mathematics or English or chemistry, why must geography prove its worth? First, however, it may be as well to ask with the sceptic if that worth can be proved. A very heartening answer comes from Professor Fenneman in his Presidential Address to the Association of American Geographers at Baltimore last December.

Mr. Fenneman proceeds by a simple and effective line of inquiry: "Suppose geography were dead, what would be left?"

Geology might easily take over topography, including its genetic treatment, which is physiography; in fact, has never given it up. So also botany has never relinquished plant geography and ecology. Zoölogy does not forget the distribution of animals. Agriculture is now so specialized and so firmly entrenched that crops and their distribution, and their relation to all manner of factors, are studied without concern for geography. Meteorology has official standing in all civilized countries and could take care of climatology if geography were bankrupt. Moreover, meteorology is commercially employed and so has the satisfaction of being good for something beside being merely good "to teach." So it is not afflicted with heart searchings regarding its own content. Mining is abundantly treated by geology and economics. The geographer only borrows from these, smooths out their details, and relates their results to something else. So economics deals with all other industries and commerce, sometimes with the aid of chemistry and other sciences, and always paying its respects to engineering.

A good part of what is termed political geography is covered also in history, and history would be more rational if it included still more. Political science, ethnography, etc., cultivate other parts of the geographi-

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cal field and do it more exhaustively than does geography. Mathematical geography is, of course, pure astronomy, except for cartography, which is straight mathematics . . . . . Outside the field of exploration, the geographer is mainly dependent on others for his data. Aside from mere location, direction, and distance, almost every fact that he employs belongs quite as much to some other science. In so far as that fact represents a class, the entire class of facts is much more apt to be known exhaustively by the other science than by geography.

With concrete data thus organized into other sciences is there anything left for geography? The accompanying diagram suggests that there is. The various distributions each isolated when

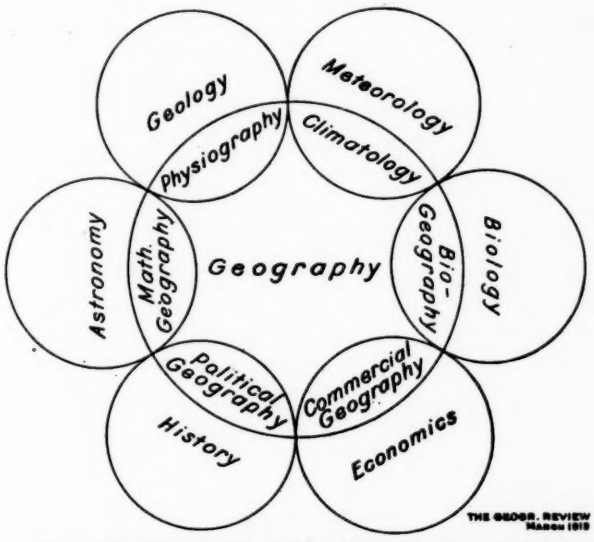

FIG. 1—This diagram expresses the fundamental conception that sciences overlap and that each one of the specialized phases of geography belongs equally to some other science: but the heart of the subject—regional geography—is distinctive and individual.

simply considered in its own sphere have a common meeting ground in geography, the central, pivotal sphere. The various factors in the space-relations of concern to man as the occupant of a definite area are fused in this, the areal unit. It is this sphere alone that can give us a complete picture of any area. Regarding such a picture Mr. Fenneman says:

In part it is a mere assembling of facts from diverse fields, facts joined together by the sole bond of a common locality. Whether we deride or apologize for this aggregation of facts, call it mere description, mere compilation, mere this or mere that (whatever it is, it is always "mere"), this humble task must still be performed before higher work is possible.

Description bears the same relation to geography that narrative does to history. There can be no sound philosophy in either, based on faulty narrative or description.

But data thus assembled from diverse fields do not remain inert. They react on each other like chemicals to produce new compounds, that is new truths. If the geographer knows less about soils and crops than the agriculturist, less of climate than the meteorologist, less of industry than the economist, less of society than the sociologist, he should still be supreme in this field of secondary compounds which can not be formed by those who handle the data of one science only.

But this view of areas in their peculiar compositeness and complexity is the very quintessence of geography and it is what we term *regional geography.* It is the one thing that is "first, last, and always geography and nothing else."

It should not be implied for one small moment that physiography and the other branches named are not geography. They all become so when directed toward a geographic purpose. But without the touchstone of areal studies, there is nothing to make physiography other than geology; ecology other than botany; natural resources other than economics.

There is, then, in geography this central core which is pure geography and nothing else, but there is much beyond this core which is none the less geography, though it belongs also to overlapping sciences. Here belong physiography and climatology, mathematical and commercial geography. Still, *the seeds are in the core, and the core is regional geography,* and it is on this account that the subject propagates itself and maintains a separate existence. Without regional geography there is no reason why geography should be treated as a separate branch.

We now see more clearly why objections have been levelled against geography as a serious study; why the question of its intrinsic value has been raised.

The situation at once suggests that we live too much on our borders and not enough in the center. If we dwell mainly in systematic physiography, why should not geology claim us as a vassal? If we live largely in commercial geography, we are in similar danger from economics; and why should it not be so? We can go around the circle with the same logic. A narrowly political geography of boundaries and capitals never had any reason for a separate existence apart from history.

If we are concerned for our independent existence no amount of fortifying our border will take the place of developing our domain. What we need is more and better studies of regions in their entirety, their compositeness, their complexity, their inter-relations of physical, economic, racial, historic, and other factors.

THE DISTRIBUTION OF PEOPLE IN CORSICA

For most people Corsica is labeled the "Isle of Unrest"—the country of the bandit and the vendetta. In the popular picture of this island there still remains a measure of truth; in its poverty and backwardness it contrasts strikingly with the average French *département*. For the student of human geography the case of Corsica is particularly interesting both in itself and in respect of the general geographical principles that find illustration there. A valuable contribution to such a study is to be found in a recent article by a well-known Italian geographer.[1]

INSULARITY

Corsica, with an area of 3,370 square miles, may be compared in size with Porto Rico. In combination with its somewhat limited area, mountainous relief and location in an enclosed sea have been powerful factors in determining its human geography. By the sea the island has been isolated yet at the same time it has been but inadequately safeguarded. The attitude of the native Corsican towards the sea may seem a little strange at first glance, for it has no attraction for him. A coasting voyage round the island conveys an impression of abandonment and solitude. The accompanying map (Fig. 1) shows how few population centers are found on the seaboard, and it is in a small number of these that the greater part of the seaboard population is concentrated. Bastia (29,412) and Ajaccio (19,227) alone contain over two-fifths of the people living in the zone within three miles of the sea. Both these ports, like other smaller ones, owe their foundation to foreigners, for the most part Genoese or Tuscans; even today their townsfolk are regarded as "foreigners" by the people of the interior.

Avoidance of the seaboard is in part due to the physical hindrances it presents to maritime enterprise. Much of the east is a lagoon coast without good harbors; on the west there is abrupt contact between mountain and sea, and the deep embayments either lack shelter or suitable communication with the hinterland. Malaria is a still more active agent in depopulating the coast. Many of the coast towns and villages are temporarily uninhabited

[1] M. G. Anfossi: Recherches sur la distribution de la population en Corse, *Receuil des Trav. de l'Inst. de Géogr. Alpine*, Vol. 6, 1918, pp. 71-135, Grenoble.

during the summer months. But the chief cause for the lack of a coast population lies in the historic necessity for shelter from intruders that has always confronted the islanders. In common with other Mediterranean islands Corsica has suffered repeated invasion. In Corsica—and the same is true of Sardinia—the mountainous interior affords admirable refuge. The population has shunned the seaboard and retired into the interior valleys, each of which is a little closed world in itself.

The mountain element reinforces the isolation created by the sea and with pastoralism, the dominant mode of life, has preserved the primitive social ideas and customs that give the island its reputation. In connection with the development of brigandage the favoring climatic circumstances should be noted. Here man can live in the open the year round: it is to this fact rather than to the shelter-affording scrub vegetation (*maquis*), with which at least half the island is covered, that brigandage should be primarily ascribed. The old characteristics, however, are on the wane. During the last century, under French influence, there has been a considerable relative growth of the coast population. A significant illustration of the changing attitude of the Corsican is the recent development of Ajaccio as a winter resort—the islander seems to be actually courting the foreigner!

THE TWO NATURAL DIVISIONS: NORTHEAST AND SOUTHWEST

At the 1911 census the population of Corsica was 288,826, an average of 86 to the square mile—a low density for western Europe. The map (Fig. 1) shows the chief centers of the 364 *communes* into which the island is divided. The communes are small, the average size being 9 square miles; they usually contain but one population center, and the proportion of scattered population is notably small. The map, then, affords a just and graphic picture of the essential features of the distribution.

The first distributional feature to arrest the attention is the blank belt that runs across the island from northwest to southeast. This belt marks the highest elevations of the island (8,000 to 9,000 feet), hence its lack of population is natural. The division is fundamental; it defines an opposition that has always existed between the two sections on either side of it; it reflects physical contrasts. The more populous northeast faces an "in-

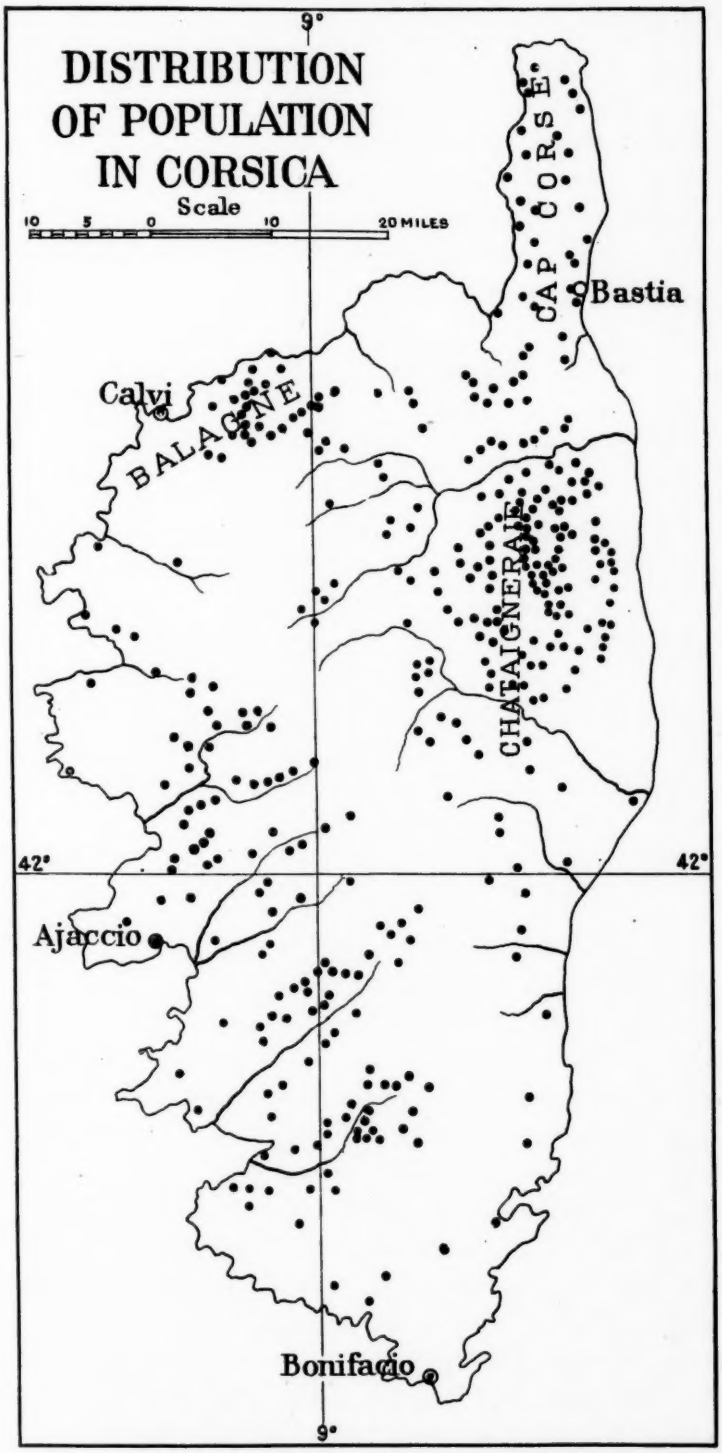

FIG. 1—Map of Corsica showing population centers (centers of *communes*). Scale 1:1,000,000. After M. G. Anfossi, Receuil des Trav. de l'Inst. de Géogr. Alpine, Vol. 6, 1918, Grenoble, p. 78.

terior'' sea, the less-populous southwest an ''exterior'' sea. The former has been more profoundly influenced from the mainland, has been more deeply disturbed by political strife. Structural and climatic differences emphasize the difference in outlook. Certain of these contrasts are well brought out by a grouping of the population according to its altitudinal distribution, an arrangement which is shown in Figure 2.

DISTRIBUTION OF POPULATION ACCORDING TO ALTITUDE

The comparatively high population of the seaboard is due, as has already been remarked, to concentration in a few seaport towns; otherwise the lower altitudes have a population greatly inferior to that which might be supported, especially in the fertile alluvial plains of the east. This feeble density is associated with a retarded development of the mediterranean cultivations appropriate to the lower zones. Where their development is furthest advanced the population is densest, as in the wine-producing centers of Cap Corse and in the Balagne (see Fig. 1) where the olive supports a dense population at an altitude of between 1,000 and 1,300 feet. In general, however, a maximum is found between 1,300 and 1,600 feet where conditions of safety from malaria and other foes meet conditions of climate and vegetation still permitting the cultivation of mediterranean products.

In the case of the northeastern section of the island a second maximum is found between 2,000 and 2,300 feet. This is due to the high population density of a well-marked natural region, the famous chestnut country (*Châtaigneraie*), the part of the island where this invaluable tree finds its most favorable habitat. The *Châtaigneraie,* moreover, is a natural fortress; its deep narrow valleys are not easy of access from the sea. The villages, typically strung along the ridges, are isolated in their own sea of verdure—the supply of all their wants. The whole life of the *Châtaigneraie* is based on the chestnut. Of pastoral economy, so characteristic elsewhere in the island, there is none; agriculture makes little demand on time; hence this region has attained a condition of village industry and petty commerce unique in rural Corsica. Lately, however, the population has declined, partly in accord with a reckless destruction of the chestnut trees for tannin—a sad waste when it is borne in mind that the value of the tannin is

only equal to that of five or six fruit crops. Above this zone population declines with increasing altitude in a normal manner.

On the southwestern side of the island there is also a second maximum, but this is found about 200 feet higher. A variety of contributing circumstances appear in explanation. The latitude is slightly more southerly and the exposure more favorable, but the chief factor seems to lie in the differences of configuration.

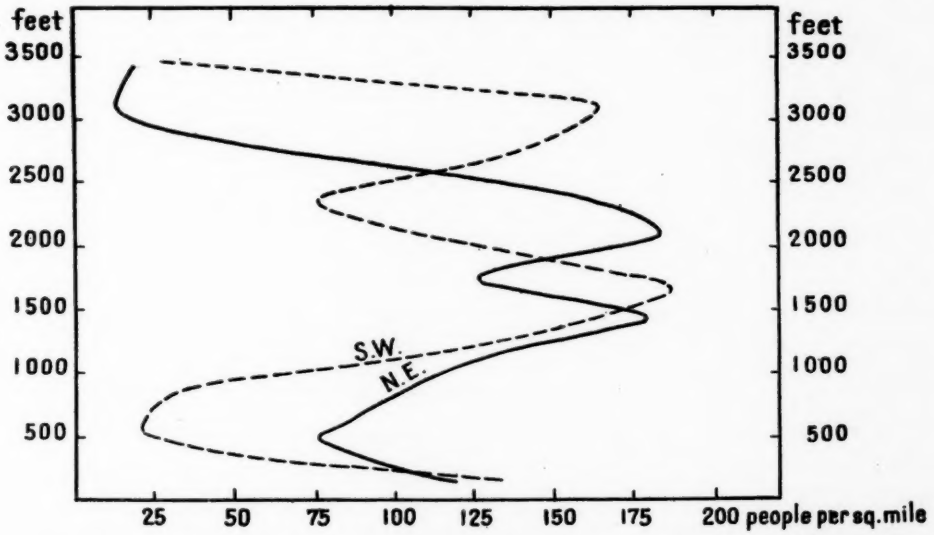

FIG. 2—Graphic representation of distribution of population in Corsica according to altitude. The solid line represents conditions in the northeastern section of the island, the broken line in the southwest. Note the general similarity—with higher altitudes preferred in the southwest—, the scant population of the lowlands, the two maxima of density at higher levels. After M. G. Anfossi (*op. cit.* in Fig. 1, pp. 105, 106).

In the granitic mass of the southwest the upper portions of the valleys are characteristically broad open basins at an advanced stage of physiographic development; from the lower basins they are separated by inaccessible defiles. In this part of the island pastoralism is the general mode of life and here, as in the Mediterranean lands in general, it is characterized by a distinctive system of migrations (*transhumance,* see *Geogr. Rev.,* Vol. 6, p. 73). When the lowlands are scorched under the clear summer skies the shepherds take their sheep and goats into the mountain pastures fed by the winter snows. In southwestern Corsica the permanent villages of this shepherd population find a suitable location in the upper valleys; hence there is an unexpectedly dense population at elevations between 2,300 and 2,900 feet.

SIGNIFICANCE OF THE GORGE AT LITTLE FALLS, NEW YORK

The famous Mohawk valley of New York, more especially its gorge at Little Falls, furnishes an excellent example of the physiographic control of human history.

The Mohawk valley is about 100 miles long, from 10 to 30 miles wide, and from 1,000 to 1,500 feet deep. It separates the Adirondack mountain region on the north from the highlands of the Catskill Mountains and the southwestern plateau of New York on the south. The valley is by far the lowest passageway across the eastern mountain barrier between the St. Lawrence valley and Alabama. Even at Rome, in the western end of the valley, the altitude is only 420 feet. At Little Falls the inner Mohawk valley narrows to a gorge about three miles long with a maximum depth of over 500 feet. In the midst of the gorge the Mohawk river lies only 360 feet above sea level. (See the U. S. Geol. Surv. Topographic Sheet, Little Falls Quadrangle.)

Some idea of the present human importance of the Little Falls gorge may be gained when we realize that the four tracks of the great New York Central and Hudson River Railroad, the two tracks of the West Shore Railroad, the one track of the Dolgeville Railroad, the Barge Canal, two highways, many telegraph and telephone lines, and the Mohawk River all thread this narrow passageway.

ITS HISTORICAL IMPORTANCE

Even before the advent of white men the Mohawk valley as a natural thoroughfare, particularly the gorge at Little Falls, largely influenced the movements of the Iroquois Indians. The white men, in the very early days of their migration, found the Mohawk valley their most important gateway to the west. One of the decisive battles of the Revolutionary War, the Battle of Oriskany, was fought in the upper Mohawk valley. In the eighteenth century the Mohawk River, with a carry around the rapids at Little Falls, was much used for transportation purposes. A short carry near Rome completed connection, through Wood's Creek and Oneida Lake, with the Great Lakes region. Very early in the nineteenth century locks were built at Little Falls, and

a canal at Rome, thus increasing the transportation facilities. Remains of those old locks at Little Falls may still be seen.

In 1825 the famous Erie Canal was completed. For over 90 years it was an important factor not only in the development of the immediate region but also of the territory much farther west. With the recent opening of the great Barge Canal a new era in water transportation across New York state has begun. One of the first long distance railroads in America was built through the Hudson-Mohawk valleys, as they furnished an exceptionally easy grade across the eastern mountain barrier. From that simple beginning the New York Central has developed into one of the greatest lines of traffic in the world.

Origin of the Gorge

The key to the importance of the Mohawk valley as a passageway is the gorge at Little Falls, which is geologically of very recent origin. Before the great Ice Age of the Pleistocene epoch there was a watershed or divide some four or five hundred feet above the present river level in the vicinity of Little Falls. Two streams had their sources upon this divide, one, the Mohawk River, flowing eastward, and the other, the Rome River, flowing westward past the sites of Utica and Rome into the Ontario basin. During the Ice Age this divide was probably somewhat lowered by ice erosion. When the ice sheet had withdrawn far enough northward to free central New York, though still filling the St. Lawrence valley, the waters of the Great Lakes had their outlet through the Mohawk valley and over the divide at Little Falls. This tremendous volume of water, at least as great as that which now pours over Niagara Falls, caused most of the cutting of the gorge as we now see it. The narrow trench in the very hard rock at the bottom of the gorge is no doubt the result of post-glacial erosion.

While the Great Lakes had their outlet through the Mohawk valley, the waters of Lake Ontario stood at a much higher level, known as Lake Iroquois, and an arm of this lake occupied the valley from Rome to Little Falls (for map see textbooks of physiography, for example that reproduced in Bowman's Forest Physiography, p. 713). All the streams from north and south

which entered this arm of the lake were heavily charged with débris from the newly ice-freed central New York region, the current not being strong enough to carry away much of the débris. Thus the old valley bottom from Rome to Little Falls was built up to such an extent that, after the disappearance of Lake Iroquois and the cutting of most of the gorge at Little Falls, the drainage from Rome was able to continue eastward. This addition of the upper waters of the present Mohawk valley to the preglacial Mohawk proved an important factor in facilitating the construction of the Erie Canal.

WILLIAM J. MILLER

THE VARIED HISTORICAL SIGNIFICANCE OF NIAGARA FALLS

An individual geographic factor may be significant in very different ways at different historical periods. In illustration of this statement of geographical influence Carl O. Sauer describes "The Rôle of Niagara Falls in History" (*Hist. Outlook,* February, 1919, pp. 57-65).

In Indian days the rich fishing in the river immediately below the falls marked Niagara as a natural place of settlement. The Iroquois tribes living in western New York had a portage here, but the question of communication was of less importance and it remained for the white man to develop the full significance of this second phase of the influence of the falls on human activities.

The French early recognized the strategic importance of the Niagara gateway leading from the corridor of the St. Lawrence and Lake Ontario to the vast interior that offered the prospect of a realm stretching from Lake Superior to the Mississippi delta. It was the great La Salle, "with his sure geographic vision and large initiative," who first selected the Niagara gateway as the point of support for this magnificent political project. Thereupon the obscure portage of the fur traders became a pawn of empire; British rivalry was aroused. And we may note that the rival was brought on the scene by another geographic feature

that has played an important rôle in history, the old Mohawk spill-way of the glacial period (described above by Mr. Miller), connecting the Hudson with Lake Ontario.

The meeting of British and French at Niagara led the former to claim for the river the rôle of international boundary: at the same time the French, whose westward communications were thereby imperilled, asserted the political unity of the Niagara valley. As a boundary the middle portion of the Niagara River —the gorge—is a perfect barrier; defense is only necessary in the upper and lower navigable portions. During the last century of peace the boundary aspect of this natural feature has lost its significance, and other considerations have arisen.

The influence of the scenic attraction of the falls grew in proportion to improvement of communications. The building of the Erie Canal and, later, railroad building contributed most largely to the tourist and excursionist business—the chief factor in the nineteenth century growth of the region. In the last quarter of the century Niagara entered on the latest phase of its human significance, as a source of hydroelectric power. The national and international questions involved in the utilization of this remarkable source of energy once again brought forward the character of Niagara as an international boundary and led to the extension of federal and international control over the falls.

GEOGRAPHICAL PUBLICATIONS

Industry and Trade. By A. L. Bishop and A. G. Keller. 426 pp.; maps, ills., index. Ginn & Co., Boston, 1918. $1.32. 5½ x 7½.

The authors of this volume aim "to present a simple but adequate account of the development and present status of this country's industrial and commercial life." In doing so "representative industries" have been treated on the basis of pre-war conditions.

Consulting the table of contents one finds that the text is divided into seven parts, as follows:

(1), Basic Factors in Our Industry—Land and People; (2), Agricultural Industries; (3), Animal Industries; (4), Mineral Industries; (5),

Manufacturing Industries; (6), Transportation; (7), The Promotion of American Industries.

At first glance this seems to be the material of commercial geography, and indeed the teacher of commercial geography will find much to interest him in the pages of this book. Each industry, however, is treated far more fully as to its historical development than as to its present status, and this treatment suggests that the book may be intended for use in connection with courses on industrial history and probably for junior high schools.

On the whole this story of our country's industrial development, while brief, is very interestingly told and the text makes pleasant reading. If the book is intended for high school use, however, it is to be regretted that the authors were not more sure as to the capabilities of high school students. Some parts of the text are distinctly of elementary character and interest, while in the other parts, there is much that will require careful study and a good bit of explanation even for students of high school age. Nevertheless, if there is a place in our schools for such a text, the book will be found stimulating and reasonably teachable.

One who is inclined to be critical might with some show of reason object to certain statements or expressions as lacking in clearness, happy phraseology, or scientific accuracy. The following might be included under one or the other of these heads:

"As we ascend from the sea the cold gradually increases."

"Land bordering on the sea takes its temperature to a large degree from that of the water."

"However, since winds are very effective in carrying heat or cold . . ."

"The trade winds and the monsoons are specialists in the conveying of moisture."

C. T. MCFARLANE

Resources and Industries of the United States. By Elizabeth F. Fisher. 246 pp.; maps, ills., index. Ginn & Co., Boston, 1919. $0.80. 5½ x 8½.

Human geography in America, with its direct outlook to the future, finds itself in particular concern with two great social problems, Conservation and Americanization. Conservation may be readily adapted as the basal idea of a school course of study. For such a course Dr. Fisher's book, "designed for pupils of Junior High School age, seventh and eighth grades," will be found useful. The distinguishing feature of the volume is the excellent illustrations round which, indeed, the text is largely built. Note, too, should be made of the fundamental maps, relief, showing physiographic provinces; rainfall, modified from the 1917 rainfall map of the U. S. Weather Bureau; and soils, simplified from the U. S. Bureau of Soils map of 1913. It is perhaps a little to be regretted that the rainfall map is not on the same scale as the other two maps. The soils map, a new feature, is particularly interesting.